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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/784,303

02/24/2004

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EXAMINER

MERKLING, MATTHEW J

ART UNIT

PAPER NUMBER

1764

MAIL DATE

DELIVERY MODE

08/23/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

**Application No.**

10/784,303

**Applicant(s)**

YAMAGUCHI, SHINJI

**Examiner**

Matthew J. Merkling

**Art Unit**

1764

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 01 August 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 5-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election with traverse of Group I in the reply filed on 8/1/07 is acknowledged. The traversal is on the ground(s) that the search would not constitute an added burden to the examiner. This is not found persuasive because searches in multiple distinct inventions to constitute an added burden.

The requirement is still deemed proper and is therefore made FINAL.

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Vance et al. (US 2002/0178707).

Regarding claim 1, Vance discloses a catalyst-carried filter (Fig. 2 (10)) comprising:

a honeycomb structure (paragraph 8 (2)) including a plurality of cells which are partitioned by partition walls (See Fig. 2 (6)) constituted of a porous ceramic (paragraph 8) including a large number of pores to constitute a channel of a gas (See Fig. 2); and

an oxidation catalyst which is carried on the surfaces of the partition walls and inner walls of the pores existing in the partition walls to promote oxidation of particulates contained in an exhaust gas (paragraph 40), the plurality of cells including one opening end and the other opening end which are alternately clogged (See Fig. 2, (8 and 9)),

wherein the plurality of cells include exhaust gas inflow cells (4) whose one opening end is clogged (See Fig. 2) and in which the oxidation catalyst is carried on the surfaces of the partition walls (paragraph 40), and purified gas outflow cells (5) whose other opening end is clogged (Fig. 2), the exhaust gas inflow cells and the purified gas outflow cells are alternately arranged (Fig. 2), and at least one fine coating layer (discriminating layer, (12)) constituted of a porous ceramic (paragraph 39) having an average pore diameter smaller than that of the porous ceramic constituting the partition wall (paragraph 39) is formed on the surface of the partition wall on the side of the purified gas outflow cell (paragraph 34, (12)). Furthermore, as mentioned in paragraph 0039, Vance indicates that the discriminating layer does not contain a catalytic material.

4. Claims 1 and 2 are rejected under 35 U.S.C. 102(b) as being anticipated by Hoj et al. (WO 00/01463).

Regarding claim 1, Hoj discloses a catalyst-carried filter (Fig. 7) comprising:  
a honeycomb structure (abstract) including a plurality of cells which are partitioned by partition walls (filter walls, page 17 lines 11-13) constituted of a

porous ceramic (See claim 14 of Hoj) including a large number of pores to constitute a channel of a gas (page 17 lines 11-13); and

an oxidation catalyst which is carried on the surfaces of the partition walls and inner walls of the pores existing in the partition walls to promote oxidation of particulates contained in an exhaust gas (page 4, lines 9-13, page 3, lines 3-5), the plurality of cells including one opening end and the other opening end which are alternately clogged (page 17 lines 11-13),

wherein the plurality of cells include exhaust gas inflow cells whose one opening end is clogged (page 17 lines 11-13) and in which the oxidation catalyst is carried on the surfaces of the partition walls (page 3, lines 3-5), and purified gas outflow cells whose other opening end is clogged (page 17 lines 11-13), the exhaust gas inflow cells and the purified gas outflow cells are alternately arranged (page 17 lines 11-13), and at least one fine coating layer (membrane) constituted of a porous ceramic (see claim 48 of Hoj) having an average pore diameter smaller than that of the porous ceramic constituting the partition wall (see abstract) is formed on the surface of the partition wall on the side of the purified gas outflow cell (see abstract, Fig. 5 (20)), furthermore, Hoj, in claim 43, describes a method of making a catalyst carried filter where the oxidation catalyst is applied to the filter body (partition walls) before the membrane is coated on the filter. As such, the membrane's surface is free of catalyst.

Regarding claim 2, Hoj, as discussed in claim 1 above, further discloses the pore diameter of the ceramic constituting the partition wall is preferably 40-80

µm (see claim 31 of Hoj) and the average pore diameter of the fine coating layer (membrane) is 5-10 µm (page 23 lines 31-32).

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hoj et al. (WO 00/01463) in view of Muramatsu et al. (US 5,384,110).

Regarding claim 3, Hoj, as discussed in claim 2 above, further discloses the porosity of the partition wall (filter wall) is preferably 40-75% (see claim 32 of Hoj). Hoj fails to teach the porosities of the fine coating layer (membrane) as 45-85%.

Muramatsu also discloses a catalyst carried filter.

Muramatsu teaches that the porosity of a thin layer (high density thin layer) on the outlet of the catalyst carried filter is preferably from 40-70% (col. 7 lines 39-46). Muramatsu teaches these ranges in order to allow the exhaust gas to easily enter into the pores of the partition walls (low density) and partially restrict the flow with the fine coating layer (high density) to allow for efficient removal of NO<sub>x</sub> by the catalyst in the partition wall (low density) (col. 7 lines 16-23).

It would have been obvious to one of ordinary skill in the art at the time of the invention to utilize the porosity ranges of Muramatsu for the fine coating layer in

the catalyst carried filter of Hoj in order to allow the exhaust gas to easily enter into the pores of the partition walls (low density) and partially restrict the flow with the fine coating layer (high density) to allow for efficient removal of NO<sub>x</sub> by the catalyst in the partition wall (low density).

7. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hoj et al. (WO 00/01463) and Muramatsu et al. (US 5,384,110) as applied to claim 3 above, and further in view of Loncke (EP 1018357 A1).

Regarding claim 4, modified Hoj, as discussed in claim 3, discloses all of the claim limitations, but fails to teach the porosity of the partition wall (inlet side) is smaller than the fine coating layer (outlet side) by 5% or more.

Loncke also discloses a filter with two layers of differing porosities.

Loncke teaches the inlet side of the filter has a layer that exhibits a porosity of at least 20% more than the porosity of the second layer (outlet side) (paragraph 6) in order to limit the amount of pressure drop over the second layer and improving the pressure drop of the filter as a whole (paragraph 4 and 9).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use a greater porosity on the inlet side of the filter than on the outlet side of the filter, as in Loncke, in the catalyst carried filter of Hoj in order to limit the amount of pressure drop over the second layer and improving the pressure drop of the filter as a whole.

#### ***Response to Arguments***

8. Applicant's arguments filed 8/1/01 have been fully considered but they are not persuasive.

35 USC § 102(b) Prior Art Rejections

9. Applicant argues that Vance does not disclose a catalyst-carried filter including "an oxidation catalyst which is carried on the surfaces of the partition walls and inner walls of the pores existing in the partition walls". The examiner respectfully disagrees because Vance in fact, does teach this by disclosing that the partition walls have a catalyst within the partition wall and on the partition wall ([0040]). As such, the rejection under 35 USC § 102(b) is withheld. Applicant further argues that Vance does not disclose "wherein a surface of the at least one fine coating layer does not carry the oxidation catalyst thereon". The examiner respectfully disagrees. As mentioned in paragraph 0039, Vance indicates that the discriminating layer does not contain a catalytic material.

As such, the rejection under 35 USC § 102(b) is withheld.

Applicant argues that Hoj fails to disclose, "wherein a surface of the at least one fine coating layer does not carry the oxidation catalyst thereon". The examiner respectfully disagrees as Hoj, in claim 43, describes a method of making a catalyst carried filter where the oxidation catalyst is applied to the filter body (partition walls) before the "membrane" is coated on the filter.

As such, the rejection under 35 USC § 102(b) is withheld.

35 USC § 103(a) Prior Art Rejections



10. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

### **Conclusion**

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew J. Merkling whose telephone number is (571) 272-9813. The examiner can normally be reached on M-F 8:30-4:30.

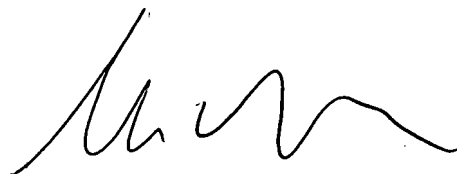
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1764

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



MJM



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